

## ABSTRACT

5           A method for converting fuel energy to electricity includes the steps of converting a higher molecular weight gas into at least one lower molecular weight gas, supplying at least one of the lower molecular weight gases to at least one turbine to produce electricity and electrochemically oxidizing at least one of the lower molecular weight gases in fuel cells. A system for converting fuel energy to electricity includes a reformer for converting a higher  
10   molecular weight gas into at least one lower molecular weight gas, at least one turbine to produce electricity from expansion of at least one of the lower molecular weight gases, and at least one fuel cell. The system can further include at least one separation device for substantially dividing the lower molecular weight gases into at least two gas streams prior to the electrochemical oxidization step. A nuclear reactor can be used to supply at least a portion of the  
15   heat the required for the chemical conversion process.